



UNITED STATES PATENT AND TRADEMARK OFFICE

18A /
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,884	02/13/2002	Krishnaswamy Ramkumar	5298-08000 PM01040	6510

35617 7590 12/22/2003

CONLEY ROSE, P.C.
P.O. BOX 684908
AUSTIN, TX 78768

EXAMINER

ERDEM, FAZLI

ART UNIT	PAPER NUMBER
----------	--------------

2826

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

mm

Office Action Summary	Application No.	Applicant(s)	
	10/074,884	RAMKUMAR	
	Examiner	Art Unit	
	Fazli Erdem	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-11 and 26-30 is/are allowed.
- 6) ☒ Claim(s) 12, 13, 16, 19, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 14, 15, 17, 18, 20, 21, 24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

1. Claims 6-11 and 26-30 allowed.
2. Claims 14, 15, 17, 18, 20, 21, 24, and 25 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12, 13, 16, 19, 22, and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Shue et al. (6,380,056) in view of Krussel et al. (5,304,398) further in view of Tremont et al. (4,749,640) further in view of Ma et al. (6,451,660).

Regarding Claims 12, 16, 17, 19 and 22, Shue et al. disclose a lightly nitridation surface for preparing thin-gate oxides where a method for forming a dielectric layer upon a silicon layer is disclosed. There is first provided a substrate employed within a microelectronics fabrication. Then a silicon layer formed over the substrate. There is then formed through use of a first thermal annealing method employing a nitrogen containing annealing atmosphere in absence of an oxidizing material or a reducing material silicon nitride containing layer upon a partially consumed silicon layer derived from the silicon layer. There is then oxidized through use of a

Art Unit: 2826

second thermal annealing method employing an oxidizing material containing atmosphere the silicon nitride containing layer to form an oxidized silicon nitride containing layer upon a further consumed silicon layer derived from the partially consumed silicon layer. Shue et al. fail to disclose the ozonation method and ozonated substance structures and ozonated substance in the required configuration. However, Tremont et al. disclose integrated circuit manufacturing process where the required ozonation method is disclosed. Furthermore, Krusell et al. disclose a chemical vapor deposition of silicon dioxide using hexamethyldisilazane where the required ozonated substance is disclosed. Finally, Ma et al. disclose a method of forming bipolar transistors comprising a native oxide layer formed on a substrate by rinsing the substrate in ozonated water where the required ozonated substance in the required manner is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required ozonation method and the ozonated substance, and ozonated substance in the required manner in Shue et al. as taught by Tremont et al., Krusell et al., and Ma et al. respectively in order to make a semiconductor dielectric/insulating substrate with better performance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (703) 305-3868. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the

Application/Control Number: 10/074,884

Page 4

Art Unit: 2826

organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

FE
December 15, 2003

NATHAN J. FLYNN
SUPERVISOR, PATENT & TRADEMARK OFFICE
U.S. DEPARTMENT OF COMMERCE
WASHINGTON, DC 20514

